

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
Underground Injection Control Program

FACT SHEET

(Pursuant to NAC 445A.874)

Project Name: Peppermill Hotel Casino and Brinkby property, Reno
Permittee Name: Peppermill Hotel Casino / Peppermill Properties
2707 South Virginia Street
Reno, Nevada 89502
Permit Number: UNEV87064
Permit Action: Permit Modification (2008)
Parcel Info: injection well parcel – 1932221, prod well parcel - 1932224

A. Description of Injection

Location

Two injection wells, one for geothermal fluid disposal (IW-4) and one for dewatering disposal (IW-5), located at the Peppermill Hotel Casino – 2707 So. Virginia St., and one geothermal injection well located at 380 Brinkby Ave., within the SW ¼ of Section 24, T 19N, R 19E, Reno, Washoe County, Nevada.

Well	DOM #	Parcel	Latitude:	Longitude:
IW-4		2707 S. Virginia	39° 29' 48"N	119° 47' 53"W
IW-5	NA	2707 S. Virginia	39° 29' 51"N	119° 47' 58"W
IW-7	33	380 Brinkby	39.495249	-119.802336

Well Name	Type of Construct.	Total Depth	Screen Interval	Max. WH Pressure
IW- 4	Deep geothermal injection well	3307 feet	2600'-2700', 2800' - 3000', 3050' – 3300'	780 psig
IW-5	Vertical well – steel casing	100 feet	61.5' to 100'	40 psig
IW-7	Shallow geothermal injection well	735 feet	574'-715'	186 psig

Characteristics

Geothermal injection well – IW-4 - Injectate water is spent geothermal fluid produced from two production wells (#1 940' deep, #2 748' deep) and that is passed through a heat exchanger for the purpose of space and water heating. Produced water has average TDS concentrations of 690 mg/L, and does not meet Nevada drinking water quality standards for arsenic, with concentrations of 0.15 mg/L.

Dewatering injection well – IW-5 - Injectate water is generated by ground water dewatering below the hotel tower. Dewatering fluid quality has an average TDS concentration of 465 mg/L, and does not meet Nevada drinking water quality standards for arsenic, with concentrations of 0.027mg/L.

Geothermal injection well – IW-7 - Injectate water is spent geothermal fluid produced from one production well (600' deep/NDOM #18) and that is passed through a heat exchanger for the purpose of space and water heating. Produced water has average TDS concentrations of 550-570 mg/L, fluoride of 1.68-2.2 mg/L, sulfate of 240 mg/L and does not meet Nevada drinking water quality standards for arsenic, with concentrations of 0.078-0.100 mg/L.

B. Wellhead Protection Info

☐ Yes ☒ No Injection well/Facility within a 2-, 5-, or 10-year groundwater protection area (based on wellhead protection delineations under a WHP plan)

Injection well/Facility within one of the following Drinking Water Protection Areas for any public water supply well:

just outside Area 4 (TMWA Corbett School well NE of site)

no Area 3

no Area 2

no Area 1

C. Synopsis

Sep. 2008: Submit major modification app to incorporate Brinkby Property, UNEV87012

Feb. 2006: Draft Permit Renewal with no changes.

June 1997: Permit Renewed, IW-5 added to permit to inject groundwater intercepted by hotel tower.

July 1993: Permit Renewed with no changes.

May 1988: Original Permit Issued.

Peppermill Hotel Casino and Peppermill Properties are operator/owner's are purchasing the parcel of land at 380 Brinkby Ave. which has an open-loop geothermal heating system consisting of one production well and one injection well (well #7). This system was permitted under UNEV87012. Peppermill has requested to combine the two permits into one. NDEP agreed this is feasible under the regulations, and in the best interest of the permittee and state.

Geothermal injection well – IW-4 - The applicant seeks to renew permit UNEV87064. The existing permit allows for injection of geothermal fluids (used to provide space heating) into IW-4 at the Peppermill Hotel Casino located within the Moana Geothermal Area in southwest Reno. Production is from a geothermal aquifer at a depth of approximately 750 feet below the surface. The heating system consists of two production wells, a heat exchanger unit and one injection well. Water is produced from two production wells, pumped through a heating system at an average rate of about 150 gpm and injected into the 3307 foot deep injection well under 125 to 150 psi pressure. The injection zone is between 2500 and 3500 feet below ground surface (bgs). The well passed a test for mechanical integrity in February 1998 and in March 2004. The well was originally permitted for injection by the Division in May 1988. Results of the March 2004 MIT show no shallow leakage, and injection occurring at the following intervals: 3220'-3224', 3252'-3255' and 3286'-3300'.

Dewatering injection system - IW-5 - This injection well was added to the permit as a modification in June 1997. It is designed to dispose of water from a dewatering system/sump in the basement area of the hotel tower on an as-needed basis. The water that collects in the sump comes from a horizontal drainage network below the hotel tower at a depth of 20 feet below ground surface (bgs). IW-5 is 100 feet in depth with blank casing to 61 feet, and screened to 100 feet bgs. The soil formation consists of poorly sorted, poorly bedded, thinly interbedded and interlensed clays, silt, sands and gravel. A flow rate of 350 gpm on a 30-day average dewatering fluid is discharged under gravity-fed conditions. The tower under slab dewatering system consists of perforated collection pipes located approximately one (1) foot below the basement floor slab. A Goulds 5 hp submersible pump with a 2 hp backup is installed in the sump. A 4-inch line conveys water from the sump to the injection well.

Geothermal injection well – IW-4 (added Oct 2008) – This well is being added to this permit in late 2008. The well has historically been covered under UNEV87012 since October 14, 1987. Peppermill purchased the property (Dec 2007) and is now the owner/operator of the well. They occupy the building, and intend to continue operating the geothermal system. The well is located under a man-hole cover in the NW corner of the parking lot. Peppermill entered the well in 2008 and cleaned out the well vault. Geothermal fluids are

used to provide heat for space and water heating at an office complex located within the Moana Geothermal Resource Area in southwest Reno. Chemical, hydrologic and geologic data indicate that production is from a geothermal aquifer at a depth of 500 to 800 feet below the surface from well #6. The heating system consists of one production well, a heat exchanger unit and one injection well. Water is produced at a temperature of approximately 130°F and pumped through the system at a rate of about 10 gpm.

2006 Renewal Note: The dewatering system that discharges to IW-5 has been offline for a number of years, and it is not anticipated that it will need to be operated in the near future. No injection has occurred at this well since 1999. The sampling requirements for well IW-5 will be suspended until the system begins to operate. The Permittee will be required to notify the Division within five (5) business days of system operation, and resume monitoring requirements.

Area of Review: There are no drinking water wells within a one mile radius of the injection well. The nearest drinking water well, the Truckee Meadows Water Authority (TMWA) Corbett production well, is located approximately 1 1/3 miles to the northeast, and down gradient from the injection well. Washoe County maintains several golf course irrigation wells about one mile west/southwest of the injection well, and up gradient. Washoe County also maintains a shallow (less than 300 feet) well near Virginia Lake, north of the injection well. This County well is used for emergency irrigation purposes only, during times of drought, and is not used for drinking water supply.

C. Receiving Water Characteristics

(in ppm)	Well #4 (2056'/3307')	Well #1	Well #2	Well #7	Standard
TDS	1148/ 1365	653	622	636	1000
Fluoride	3.6/ 14.0	1.8	2.1	2.3	2.0
Sulfate	509/ 694	260	280	260	500
Iron	1.12/ 2.2	0.12	0.02	0.05	0.6
Boron	2.9/ 4.0	1.1	1.3	1.3	-
Manganese	0.05/ 0.38	<0.02	<0.02	<0.02	0.1
Arsenic	0.160/ 0.077	0.15	0.16	0.12	0.010
Date				8-14-86	

IW-4:

Geothermal injection well - Groundwater in the area of review has historically flowed in a northeasterly direction with an average hydraulic gradient of 0.03 (Flynn and Ghsun, 1984, *Geologic and hydrologic research on the Moana geothermal system Washoe, County, Nevada: Final Report prepared under USDOE Contract No. ACOE-82RA50075.*) Groundwater pumped from the Moana Geothermal area has been documented as having elevated concentrations of arsenic, boron and fluoride (Ibid.). Chemical analyses indicate that the receiving water is of poorer quality than injectate water, with background levels of arsenic exceeding drinking water standards at 0.19 mg/L.

IW-5: Dewatering injection well – Chemical analyses indicate that the receiving water is chemically similar to injectate water. Drinking water standards for arsenic are exceeded in the receiving water, with background levels of 0.021 mg/L.

IW-7: Geothermal injection well - Chemical analyses indicate that the receiving water is chemically similar to injectate water.

D. Procedures for Public Comment

The Notice of the Division's intent to modify and reissue a permit authorizing the facility to discharge to the ground water of the State of Nevada is being sent to the *Reno Gazette-Journal* for publication no later than October 25, 2008. The notice is being mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit can do so in writing for a period of 30 days following the date of the public notice. The comment period can be extended at the discretion of the Administrator. All written comments received during the comment period will be retained and considered in the final determination.

A public hearing on the proposed determination can be requested by the applicant, any affected state, any affected interstate agency, the regional administrator of EPA Region IX or any interested agency, person or group of persons. The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings will be conducted in accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

E. Proposed Determination

The Division has made the tentative determination to renew the proposed permit.

F. Proposed Effluent Limitations and Special Conditions

Injection shall be limited as specified in the permit conditions

- a. The injection pressure shall not exceed 780 psig and 40 psig measured at the wellheads of IW-4 and IW-5, respectively, as calculated per NAC 445A.911.2. At no time shall injection pressures or the rate of injection be such that breakthrough or surfacing of injection fluids occurs. If breakthrough occurs, injection shall cease immediately into well(s) directly related to breakthrough.
- b. The injection rate shall not exceed 1200 gpm into IW-4, and 400 gpm into IW-5.

Samples of fluid discharged to the following wells shall be collected and analyzed for the parameters at the frequencies described in the permit.

G. Rationale for Permit Requirements

The permit conditions will help to ensure that injected fluids do not adversely affect the existing water quality or hydrologic regime.

Prepared by: Russ Land
Date: October 15, 2008